REMARKS

Claims 1 and 2 have been rejected under 35 U.S.C. §102(b) as anticipated by Sakurai et al (Published U.S. Patent Application No. 2002/0029098), while Claims 3-8 have been rejected under 35 U.S.C. §103(a) as unpatentable over Sakurai et al in view of Tazawa (U.S. Patent No. 4,989,150). (While Claim 9 does not appear to have been expressly rejected on any grounds, Applicants note that it is discussed in connection with the rejection of Claims 1 and 2 under 35 U.S.C. §102(b), and for the purpose of the discussion which follows, it is assumed that the same ground of rejection applies to Claim 9.) However, for the reasons set forth hereinafter, Applicants respectfully submit that all claims which remain of record in this application distinguish over the cited references, whether considered separately or in combination.

Sakurai et al discloses an electronic control unit with an arithmetic processing section and plural actuator drivers which are set to the actuator side, separately from the electronic control unit, and are connected with the arithmetic processing section via a serial communication line. Each of the actuator drives has a timer circuit, and the electronic control unit transmits a PWM frequency setting signal and a duty setting signal for the actuator drivers 4 to the timer circuit through the serial communication line. It is necessary accurately to control the fuel injection timing through time sharing, by using the

actuator driver including the timer circuit; and such timing may be accurately controlled from the electronic control unit 1 through an exclusive communication line.

However, Sakurai et al does not teach or suggest the following features of Claim 1:

1. A microcomputer for operating various control signals is connected to plural output driver circuits for driving various automobile-use actuators through a serial communication line, a clock signal line and a synchronized signal line;

2. The microcomputer is configured to supply a clock signal for timer count generated by a microcomputer-side oscillator to the timer circuits of the first and second output drive circuits via the clock signal line;

3. Furthermore, the microcomputer supplies an engine rotation synchronized signal generated at the microcomputer-side on the basis of a crank angle sensor signal and a cam angle sensor signal via the synchronized signal line; and

4. The timer circuit of the second output drive circuit generates the pulse signal on the basis of the second control data signal received from the

microcomputer by the serial communication interface and the engine rotation synchronized signal supplied from the microcomputer.

Regarding Items 1 and 2 above, in Sakurai et al, the actuator drives are connected to the arithmetic processing section (microcomputer) via only the serial communication line (or exclusive line as needed), and not via a clock signal line. Furthermore, in Sakurai et al, a clock generation circuit is built in the timer circuit of the actuator drivers to self-correct an oscillation frequency for the timer circuit. (See paragraphs [0049] and Figures 2 and 3.) Therefore, each of the actuator drivers has its own individual self-clock generation circuit. On the other hand, there is no need for timer circuits of the output drive circuit in the control unit according to the present invention to have such a self-clock generation circuit, because a clock signal for timer count is generated by a microcomputer-side oscillator, and is supplied to the timer circuits of the output drive circuits via a clock signal line.

Sakurai et al also indicates that the above timing for the injector may be accurately controlled from the electronic control unit through an exclusive communication line. That is, it appears to send the timing signal directly from the electronic control unit (microcomputer) to the actuator driver through the exclusive communication line. It further differs from Item 3 above, however, in that there is no suggestion of generating the pulse signal (timing signal) on the

basis of the second control data signal (for setting output start timing and output end timing or output start timing and pulse width of the pulse signal) received from the microcomputer via the serial communication line, and the engine rotation synchronized signal supplied from the microcomputer, as provided in Items 3 and 4 above.

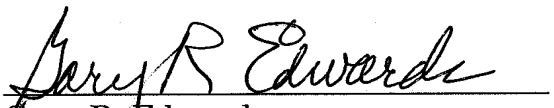
The Tazawa reference discloses an ECU comprising various calculating circuits and an output circuit for injectors. However, in Tazawa, a timer for generating pulse signal (timing signal) for injectors is provided in an ECU, and is not provided to the output circuit for the injector. Consequently, Tazawa does not teach or suggest those features mentioned above which are missing in Sakurai et al. Accordingly, the combination of Sakurai et al and Tazawa also fails to replicate the present invention, as claimed.

In light of the foregoing remarks, this application should be in consideration for allowance, and early passage of this case to issue is respectfully requested. If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and

please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #056208.53362US).

Respectfully submitted,



Gary R. Edwards
Registration No. 31,824

CROWELL & MORING LLP
Intellectual Property Group
P.O. Box 14300
Washington, DC 20044-4300
Telephone No.: (202) 624-2500
Facsimile No.: (202) 628-8844
GRE:kms
6131933_1